

Pneumatic Dilatation of Achalasia Complicated by Pneumomediastinum

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Abstract:

Summary:

The risk of esophageal perforation after pneumatic dilatation for achalasia is of the order of 1 to 5%, with a mortality rate of 1 to 20%. These perforations must be recognized early. Here we report a case of iatrogenic perforation in a patient with achalasia. He is a 40-year-old man admitted to our establishment to undergo pneumatic dilation. A 40mm balloon dilator with an inflation pressure of 20psi was used for 2 minutes as usual. Just after the procedure and leaving the operating room, the patient presented intense epigastralgia, the thoraco-abdominal scan revealed mediastinal pneumo managed conservatively with total parenteral nutrition and intravenous antibiotics. The patient received oral nutrition 14 days later without any complications with normal CT control. Three months after discharge from the hospital, the patient was in good health and without dysphagia.

Key words: achalasia; dilatation; pneumomediastinum.

Introduction:

Esophageal achalasia is a primary motor disorder of unknown cause. The main features are the absence or decrease of peristaltic waves in the esophageal body and impaired relaxation of the lower esophageal sphincter.

Management is palliative with pneumatic dilatations, pharmacological treatment or endoscopic or surgical myotomy.

Pneumatic dilatation of achalasia requires forced distention of the lower esophageal sphincter to permanently reduce its pressure. Its main complication is esophageal perforation with an incidence of between 1% and 5%, the mortality rate can reach 20%; When esophageal perforation occurs, it should be diagnosed and treated as early as possible because a delay in diagnosis and management directly affects the patient's prognosis [1].

Here we report a case of iatrogenic esophageal perforation immediately after dilation in a patient with achalasia managed conservatively.

Case report:

A 40-year-old man followed for achalasia presented to our establishment to undergo endoscopic pneumatic dilatation on an outpatient basis under sedation as usual.

Placement of the dilator was carried out under fluoroscopic guidance. A 30.35 and 40 mm achalasia balloon dilator (Boston Scientific) with inflation pressure up to 20 psi (1034 mm Hg) for 2 minutes was used according to standard practice.

Just after the operation and leaving the operating room, the patient felt intense epigastral pain. A thoraco-abdominal CT scan showed mediastinal pneumo secondary to esophageal perforation (figure 1).



Figure 1: A chest CT scan reveals the esophageal breach and mediastinal Pneumatic.

Once the diagnosis of transmural perforation was confirmed, a conservative treatment protocol was implemented, which consisted of stopping oral feeding (nothing by mouth), intravenous broad-spectrum antibiotics, intravenous antacids. (proton pump inhibitors) and reinforced clinical monitoring. From the start of treatment, a thoracic surgeon was consulted and a multidisciplinary evaluation by a team composed of a gastroenterologist, a surgeon and a radiologist was continued throughout the hospitalization. Chest radiographs were taken twice a week for early diagnosis of complications such as pleural effusions, pneumothorax, pneumonia, or pneumoperitoneum.

Fourteen days later, CT scan confirmed complete resolution of pneumomediastinum (Figure 2) and the patient received oral nutrition without any complications.



Figure 2: CT scan after 14 days shows complete resolution of pneumomediastinum.

Three months later, the patient was healthy and did not complain of dysphagia or other symptoms. Endoscopy showed complete healing of the esophageal mucosa.

Discussion:

Achalasia is a rare primary motor disorder of the esophagus, characterized by defective relaxation of the lower esophageal sphincter (LES) and absence of peristalsis during swallowing [2]. Hypertonic LES causes functional obstruction that leads to progressive solid and liquid dysphagia, regurgitation of undigested food, chest pain, and weight loss [3]. The pathophysiological mechanism includes a selective loss of inhibitory motor neurons in the myenteric plexus, containing nitric oxide and vasoactive intestinal peptide, resulting in unopposed excitatory neurotransmission. Although several pathogenetic hypotheses have been proposed (e.g., infections, inherited defects, and autoimmune destruction), the etiology remains unknown [2,4].

As there is no possibility of reversing or slowing the underlying neuronal degeneration, the goal of current treatment options is to reduce LES pressure to improve bolus passage.

Therapeutic options available include oral pharmacotherapy (nitrates and calcium channel blockers), botulinum toxin injection into the esophagogastric junction (EGJ), pneumatic dilatation (PD), and per endoscopic POEM or surgical esophagomyotomy.

However, PD is considered by many to be the first-line treatment [5-7] with success rates varying considerably due to differences in dilation protocols, types of dilator balloon, duration of follow-up.

While laparoscopic Heller myotomy with fundoplication is generally reserved for patients who have persistent dysphagia after multiple dilations or who have undergone perforation [8].

Although less effective than endoscopic dilation in the long term, intrasphincteric botulinum toxin injection is another viable endoscopic option in young patients who do not respond to pneumatic dilation or who are unable or unwilling to undergo surgery.

Peroral endoscopic POEM myotomy has recently been indicated as an alternative treatment to surgery [9].

Outcome expectations and risks of each treatment option over time must be carefully considered and weighed in the decision-making process.

Acute perforations are life-threatening emergencies in which rapid closure is necessary to avoid contamination of visceral spaces.

Several risk factors for transmural perforation have been identified, including balloon instability, higher dilation pressures, repeated dilations, malnutrition, longer duration of symptoms, large amplitude contractions, and esophageal diverticula [10 -14].

For many years, surgery represented the only adequate treatment, particularly in patients with significant contamination. Alternatively, temporary esophageal stent placement has recently been used in the treatment of patients with iatrogenic perforations with immediate and complete sealing of the ruptures [15]. A conservative approach has also been reported without requiring surgery, especially for nontransmural tears [16].

Surgery should only be indicated in cases where rupture of the repair site occurs. However, caution, careful observation for signs of aggravation and close cooperation with thoracic surgeons, to guard against any further complications, are strongly recommended.

Conclusion :

Pneumatic dilation is a useful palliative measure for achalasia. However, it carries a risk of perforation. In any patient treated by dilation, it is obligatory to think about perforation when the clinical state is different after the procedure. The success of the management of perforated esophagus and the control of sepsis and mediastinitis directly depend on the clinical condition of the patient and the time taken to discover the perforation.

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